The following provides a list of concepts that you should be familiar with for the final which we have covered since the second midterm. Although this list is intended to cover as much as possible, you should also refer to lecture notes and homework (both written and online) for an idea of what you may be expected to know. For some topics, additional exercises are provided which you may choose to work through in order to help yourself prepare for the exam. Some of these are a duplication of assigned homework problems which are intended to better emphasize what you might be expected to do while others are new and intended to provide additional opportunity for practice. In addition to reviewing examples done in lecture and assigned as homework, this will provide you with a solid understanding of concepts which may be tested. However, you may be asked to apply understanding of these concepts in new ways on the exam, so it is important that you master the underlying concepts and fully understand the motivation of each step of the solution in addition to knowing how to solve the exercises you review.

16.1 The definite integral of a function of two variables
   • Estimate via Riemann sums
   • Area of a region
   • Volume under the graph of f
   • Average value of a function
Do not worry about convergence of upper and lower sums

16.2 Iterated integrals
   • Compute double integrals
   • Set up limits of integration from word problems or graphs
   • Changing order of integration
16.2 #9, 12, 14, 15, 20, 21, 31, 34, 37, 43, 45, 51

16.3 Triple integrals
   • Compute triple integral
   • Set up limits of integration
   • Sketch region of integration
16.3 #1, 3, 9, 19, 39, 41